

Claims

1. An apparatus for transporting sheet-shaped materials comprising:
 - a spring plate;
 - a frictional wheel rotatably mounted on the spring plate;
 - an actuating element for bending the spring plate between a first active bending state and a second passive bending state;
 - wherein the frictional wheel is in contact with sheet-shaped materials when the spring plate is in the active bending state and is not in contact with sheet-shaped materials when the spring plate is in the passive bending state.
2. An apparatus in accordance with claim 1, wherein the spring plate is predeformed with a radius.
3. An apparatus in accordance with claim 1, wherein the spring plate is in a bi-stable bending state when in one of the active bending or passive bending states.
4. An apparatus in accordance with claim 1, wherein when the spring plate is in the passive bending state, a restoring force pre-stresses it in the direction of the active bending state.
5. An apparatus in accordance with claim 4, wherein the restoring force is at least partially applied by the pre-stressing elements.
6. An apparatus in accordance with claim 1, wherein the actuating element is a cam wheel that has at least one minimum and one maximum radius (R_1 , R_2) and the transition between the radii (R_1 , R_2) is continuous.
7. An apparatus in accordance with claim 1, wherein the spring plate is a plate of spring steel.

8. An apparatus for transporting sheet-shaped materials comprising:
- a housing;
 - a spring plate mounted in the housing;
 - a frictional wheel rotatably mounted on the spring plate;
 - an actuating element for bending the spring plate between a first active bending state and a second passive bending state;
 - a controller for controlling the actuating element,
- wherein the frictional wheel is in contact with sheet-shaped materials when the spring plate is in the active bending state and is not in contact with sheet-shaped materials when the spring plate is in the passive bending state.
9. An apparatus in accordance with claim 8, wherein the spring plate is predeformed with a radius.
10. An apparatus in accordance with claim 8, wherein the spring plate is in a bi-stable bending state when in one of the active bending or passive bending states.
11. An apparatus in accordance with claim 8, wherein when the spring plate is in the passive bending state, a restoring force pre-stresses it in the direction of the active bending state.
12. An apparatus in accordance with claim 11, wherein the restoring force is at least partially applied by the pre-stressing elements.
13. An apparatus in accordance with claim 8, wherein the actuating element is a cam wheel that has at least one minimum and one maximum radius (R_1 , R_2) and the transition between the radii (R_1 , R_2) is continuous.
14. An apparatus in accordance with claim 8, wherein the spring plate is a plate of spring steel.

15. A method for transporting sheet-shaped materials comprising:
 providing a spring plate;
 mounting a rotatable frictional wheel on the spring plate;
 bending the spring plate between a first active bending state and a second passive bending state;
 wherein the frictional wheel comes in contact with sheet-shaped materials when the spring plate is in the active bending state and is not in contact with sheet-shaped materials when the spring plate is in the passive bending state.
16. A method in accordance with claim 15, wherein the spring plate is predeformed with a radius.
17. A method in accordance with claim 15, wherein the spring plate is in a bi-stable bending state when in one of the active bending or passive bending states.
18. A method in accordance with claim 15, wherein when the spring plate is in the passive bending state, a restoring force pre-stresses it in the direction of the active bending state.
19. A method in accordance with claim 18, wherein the restoring force is at least partially applied by the pre-stressing elements.
20. A method in accordance with claim 15, wherein bending is performed by an actuating element.
21. A method in accordance with claim 20, wherein the actuating element is a cam wheel that has at least one minimum and one maximum radius (R1, R2) and the transition between the radii (R1, R2) is continuous.
22. A method in accordance with claim 15, wherein the spring plate is a plate of spring steel.